

INTERPRETING DOT AND BOX PLOTS – HOW HAS THE U.S. HOUSE OF REPRESENTATIVES CHANGED OVER TIME?

Activity Items

The following items are part of this activity and appear at the end of this student version.

- Item 1: Apportionment of the U.S. House of Representatives Based on the 2010 Census
- Item 2: Number of Seats in the U.S. House of Representatives for Each State in 1940 and 2010

Student Learning Objectives

- I will be able to create frequency tables, dot plots, and box plots from data.
- I will be able to compare, interpret, and analyze dot and box plots by focusing on the center, shape, and spread of the distributions.
- I will be able to summarize changes in the number of seats in the U.S. House of Representatives allocated to each state between 1940 and 2010.

NAME: _____ DATE: _____

In this activity, you will create and analyze tables and graphs to figure out how different states' numbers of seats in the U.S. House of Representatives have changed over time.

Answer the following questions by examining **Item 1: Apportionment of the U.S. House of Representatives Based on the 2010 Census**, which labels each state with the number of representatives it had in 2010 and which uses different colors to show how this number changed from 2000.

1. How many representatives did your state have in 2010?
2. Which state had the most representatives in 2010, and how many did it have?
3. How many states had only one representative? Which states were they?

Now let's go further back in time, to 1940, before World War II. Look at **Item 2: Number of Seats in the U.S. House of Representatives for Each State in 1940 and 2010** to answer the following questions and prompts:

1. Why do you think there are there no numbers for Alaska and Hawaii in 1940?

2. Complete the frequency tables for 2010 and 1940.

2010 Frequency Table	
Number of Representatives	Frequency (Number of States)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

1940 Frequency Table	
Number of Representatives	Frequency (Number of States)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

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STUDENT VERSION

2010 Frequency Table	
Number of Representatives	Frequency (Number of States)
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	

1940 Frequency Table	
Number of Representatives	Frequency (Number of States)
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	

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STUDENT VERSION

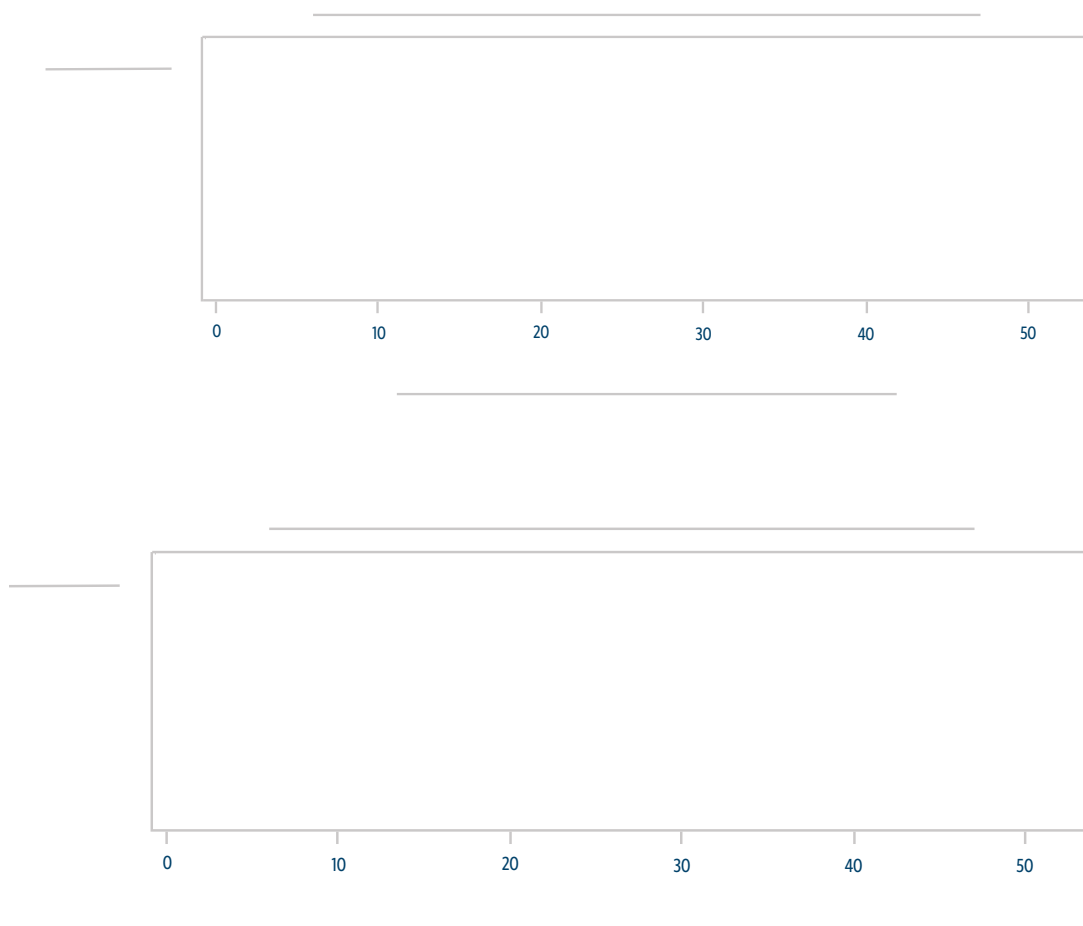
2010 Frequency Table	
Number of Representatives	Frequency (Number of States)
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	

1940 Frequency Table	
Number of Representatives	Frequency (Number of States)
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	

2010 Frequency Table	
Number of Representatives	Frequency (Number of States)
52	
53	
Total	

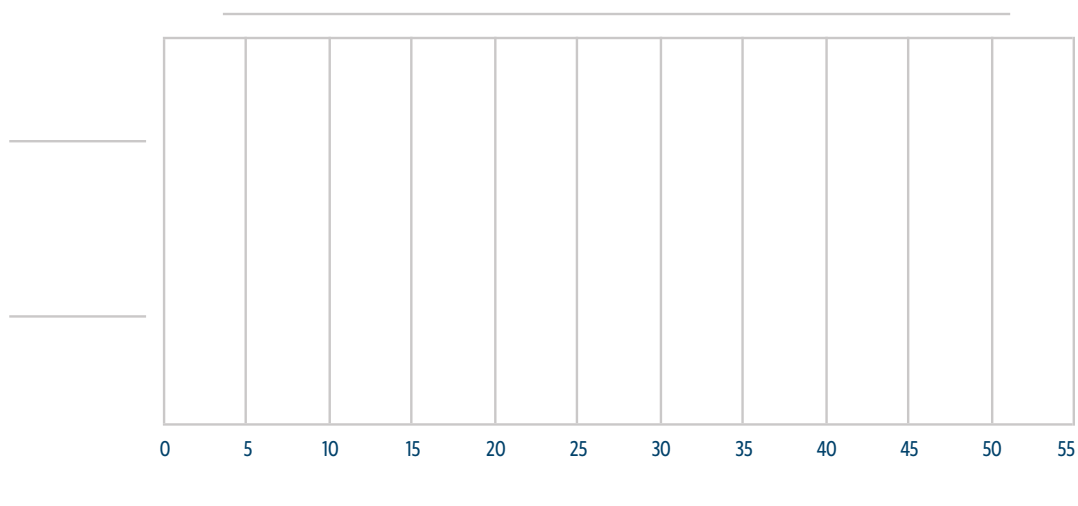
1940 Frequency Table	
Number of Representatives	Frequency (Number of States)
52	
53	
Total	

3. Refer to your frequency tables to create one dot plot for the 2010 data and another for the 1940 data. Use one dot for every state, add a title to each graph, and label your horizontal axes.



- | | 2010 | 1940 |
|---------|------|------|
| Minimum | | |
| Q_1 | | |
| Median | | |
| Q_3 | | |
| Maximum | | |
| Range | | |
| IQR | | |

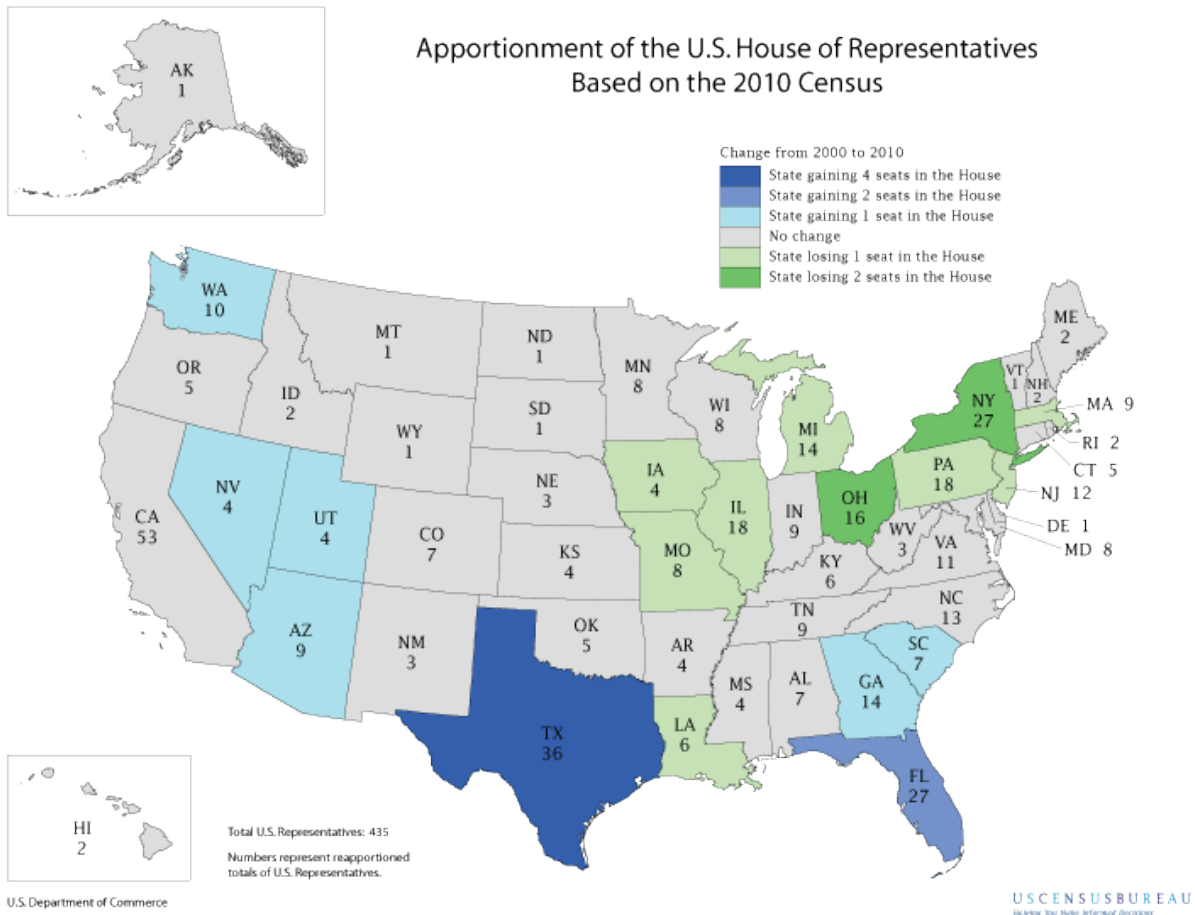
6. Use your five-number summaries to create a box plot for each year of data on the template below, one above the other. Be sure to title the graph and use a ruler to make each box plot neat.



7. What do you notice when you compare your box plots?

8. Using what you know about U.S. history and referring to your dot and box plots, write a headline and three-paragraph news article: Use your first paragraph to discuss 1940 apportionment, your second paragraph to discuss 2010 apportionment, and your third paragraph to discuss any changes in apportionment that occurred between 1940 and 2010 and why you think they happened.

Item 1: Apportionment of the U.S. House of Representatives Based on the 2010 Census



www.census.gov/history/img/2010apportionment-map.gif

Item 2: Number of Seats in the U.S. House of Representatives for Each State in 1940 and 2010

	1940	Pop. 1940	2010	Pop. 2010
Alabama	9	2,832,961	7	4,779,736
Alaska	N/A	72,524	1	710,231
Arizona	2	499,261	9	6,392,017
Arkansas	7	1,949,387	4	2,915,918
California	23	6,907,387	53	37,253,956
Colorado	4	1,123,296	7	5,029,196
Connecticut	6	1,709,242	5	3,574,097
Delaware	1	266,505	1	897,934
Florida	6	1,897,414	27	18,801,310
Georgia	10	3,123,723	14	9,687,653
Hawaii	N/A	423,330	2	1,360,301
Idaho	2	524,873	2	1,567,582
Illinois	26	7,897,241	18	12,830,632
Indiana	11	3,427,796	9	6,483,802
Iowa	8	2,538,268	4	3,046,355
Kansas	6	1,801,028	4	2,853,118
Kentucky	9	2,845,627	6	4,339,367
Louisiana	8	2,363,880	6	4,533,372
Maine	3	847,226	2	1,328,361
Maryland	6	1,821,244	8	5,773,552
Massachusetts	14	4,316,721	9	6,547,629
Michigan	17	5,256,106	14	9,883,640
Minnesota	9	2,792,300	8	5,303,925
Mississippi	7	2,183,796	4	2,967,297
Missouri	13	3,784,664	8	5,988,927

	1940	Pop. 1940	2010	Pop. 2010
Montana	2	559,456	1	989,415
Nebraska	4	1,315,834	3	1,826,341
Nevada	1	110,247	4	2,700,551
New Hampshire	2	491,524	2	1,316,470
New Jersey	14	4,160,165	12	8,791,894
New Mexico	2	531,818	3	2,059,179
New York	45	13,479,142	27	19,378,102
North Carolina	12	3,571,623	13	9,535,483
North Dakota	2	641,935	1	672,591
Ohio	23	6,907,612	16	11,536,504
Oklahoma	8	2,336,434	5	3,751,351
Oregon	4	1,089,684	5	3,831,074
Pennsylvania	33	9,900,180	18	12,702,379
Rhode Island	2	713,346	2	1,052,567
South Carolina	6	1,899,804	7	4,625,364
South Dakota	2	642,961	1	814,180
Tennessee	10	2,915,841	9	6,346,105
Texas	21	6,414,824	36	25,145,561
Utah	2	550,310	4	2,763,885
Vermont	1	359,231	1	625,741
Virginia	9	2,677,773	11	8,001,024
Washington	6	1,736,191	10	6,724,540
West Virginia	6	1,901,974	3	1,852,994
Wisconsin	10	3,137,587	8	5,686,986
Wyoming	1	250,742	1	563,626

www.census.gov/prod/cen2010/briefs/c2010br-08.pdf

To view the source data online, click on the link above and go to Page 2.